

WHAT IS CLAIMED IS

5

1. A device for scanning a document,
comprising:

a photoelectric conversion unit which scans a
document, and supplies image data of the scanned
10 document;

a background detecting unit which detects a
background level of the image data;

an image processing unit which applies one or
more types of image processing to the image data, and
15 applies image processing identical to said one or more
types of image processing to the detected background
level; and

a background removal unit which removes
background noise from the image data having undergone
20 said image processing according to a threshold that is
derived from the background level having undergone said
image processing.

25

2. The device as claimed in claim 1, wherein
said one or more types of image processing includes γ
conversion.

5

3. The device as claimed in claim 2, wherein
the γ conversion is performed at an end of said one or
10 more types of image processing.

4. The device as claimed in claim 1, wherein
said one or more types of image processing includes MTF
correction.

20

5. The device as claimed in claim 1, wherein
said one or more types of image processing includes a
filtering process.

25

6. The device as claimed in claim 1, wherein
said image processing unit applies said one or more
types of image processing to the image data and the
detected background level through one and same operation.

5

7. The device as claimed in claim 6, further
10 comprising a combining unit which includes the detected
background level into the image data as part of the
image data prior to the image processing by said image
processing unit.

15

8. The device as claimed in claim 7, wherein
said combining unit generates a gate signal indicative
20 of a position of the detected background level included
in the image data, said device further comprising a
background data extracting unit which extracts the
detected background level from the image data in
response to the gate signal.

25

9. The device as claimed in claim 7, wherein
said one or more types of image processing includes a
filtering process, and said combining unit includes the
detected background level into the image data at a
5 position of a blank period of the image data.

10 10. The device as claimed in claim 7, wherein
said one or more types of image processing includes a
filtering process, and said combining unit includes the
detected background level into the image data at a
position of a valid data period of the image data such
15 that the included detected background level has a data
size larger than a filter size of said filtering process.

20 11. The device as claimed in claim 1, further
comprising a printer unit which prints an image on a
paper sheet according to the image data from which the
background noise is removed by said background removal
25 unit.

12. An apparatus for scanning a document,
comprising:

a memory unit which stores therein scanned
image data;

5 an input unit which receives a user
instruction as to whether to perform background noise
removal on the scanned image data; and

a background removal unit which removes
background noise from the scanned image data stored in
10 said memory unit in response to the instruction
indicative of performing of the background noise removal,
and refrains from removing background noise from the
scanned image data stored in said memory unit in
response to the instruction indicative of non-performing
15 of the background noise removal.

20 13. The apparatus as claimed in claim 12,
further comprising a controller which connects said
memory unit to an external network so as to allow access
to be made from the external network to the scanned
image data stored in said memory unit.

25

14. A method of processing image data,
comprising:

a background detecting step of detecting a
background level of image data of a scanned document;
5 an image processing step of applying one or
more types of image processing to the image data, and
applying image processing identical to said one or more
types of image processing to the detected background
level; and

10 a background removal step of removing
background noise from the image data having undergone
said image processing according to a threshold that is
derived from the background level having undergone said
image processing.

15

15. The method as claimed in claim 14, wherein
20 said one or more types of image processing includes γ
conversion.

25

16. The method as claimed in claim 14, wherein the γ conversion is performed at an end of said one or more types of image processing at said image processing step.

5

17. The method as claimed in claim 14, wherein
10 said one or more types of image processing includes MTF correction.

15

18. The method as claimed in claim 14, wherein said one or more types of image processing includes a filtering process.

20

19. The method as claimed in claim 14, wherein said image processing step applies said one or more
25 types of image processing to the image data and the

detected background level through one and same operation.

5

20. The method as claimed in claim 19, further comprising a combining step of including the detected background level into the image data as part of the image data prior to the image processing by said image processing step.

15

21. The method as claimed in claim 20, further comprising:

a gate signal generating step of generating a gate signal indicative of a position of the detected background level included in the image data; and

20

a background data extracting step of extracting the detected background level from the image data in response to the gate signal.

25

22. The method as claimed in claim 20, wherein
said one or more types of image processing includes a
filtering process, and said combining step includes the
detected background level into the image data at a
5 position of a blank period of the image data.

10 23. The method as claimed in claim 20, wherein
said one or more types of image processing includes a
filtering process, and said combining step includes the
detected background level into the image data at a
position of a valid data period of the image data such
15 that the included detected background level has a data
size larger than a filter size of said filtering process.

20

24. A method of scanning a document,
comprising:

a storing step of storing scanned image data
in memory;

25 an accepting step of accepting a user

instruction as to whether to perform background noise removal on the scanned image data; and

5 a selecting and background noise removal step of removing background noise from the scanned image data stored in said memory in response to the instruction indicative of performing of the background noise removal, and refraining from removing background noise from the scanned image data stored in said memory in response to the instruction indicative of non-performing of the
10 background noise removal.

15 25. The method as claimed in claim 24, further comprising a step of allowing access to be made from an external network to the scanned image data stored in said memory.

20

26. A device for scanning a document,
comprising:

25 scanning means for scanning a document, and

for supplying image data of the scanned document;

background detecting means for detecting a background level of the image data;

image processing means for applying one or
5 more types of image processing to the image data, and
for applying image processing identical to said one or
more types of image processing to the detected
background level; and

background removal means for removing
10 background noise from the image data having undergone
said image processing according to a threshold that is
derived from the background level having undergone said
image processing.

15

27. A device for scanning a document,
comprising:

20 a background detecting unit which detects a
background level of image data of a scanned document;

a threshold generating unit which generates a
threshold based on the detected background level;

a clipping unit which clips to the threshold
25 the image data above the threshold;

an image processing unit which applies one or more types of image processing to the clipped image data and the threshold; and

a background removal unit which removes
5 background noise from the clipped image data having undergone said image processing according to the threshold having undergone said image processing.

10

28. The device as claimed in claim 27, further comprising a combining unit that includes the threshold into the clipped image data as part of the clipped image
15 data prior to the image processing by said image processing unit.

20

29. The device as claimed in claim 28, wherein said one or more types of image processing includes a filtering process, and said combining unit includes the threshold into the clipped image data at a position of a
25 valid data period of the clipped image data such that

the included threshold has a data size larger than a filter size of said filtering process.

5

30. A device for scanning a document,
comprising:

background detecting means for detecting a
10 background level of image data of a scanned document;
threshold generating means for generating a
threshold based on the detected background level;
clipping means for clipping to the threshold
the image data above the threshold;
15 image processing means for applying one or
more types of image processing to the clipped image data
and the threshold; and
background removal means for removing
background noise from the clipped image data having
20 undergone said image processing according to the
threshold having undergone said image processing.